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Klamathweed Beetle

The Klamathweed beetle, *Chrysolina quadrigemina*, is native to northern and central Europe and western Asia. The first North American introduction was reported from California in 1945 where it was introduced as a biological control for St. John's Wort (*Hypericum perforatum*) which was listed on the federal noxious weed list. The beetle has become well established in California, Idaho, Montana, Oregon, Washington and most recently, western North Carolina where it defoliates H.

perforatum by targeting hypericin containing glands. The presence of the Klamathweed beetle in North Carolina was first reported in 1997 from a shipment of fresh St. John's Wort harvested from naturalized populations in Oregon. The beetles overwintered successfully and established a population in Brevard, NC. Additional populations were detected in 1999 from experimental plantings

located in Ashe County, NC, at the Upper Mountain Research Extension Station and the Mountain Horticultural Crops Research & Extension Center (MHCREC) in Fletcher, NC.

The recent popularity of St. John's Wort (*H. perforatum*) for its reported antidepressant and antiviral properties has prompted interest in commercial production. Because commercial demand exceeded available supply of the crop in 1997, there is increased interest in propagation and associated pathogens.

Destructive defoliating stages of the beetle are both larval and adult stages. They are reported to be host specific to St. John's Wort (*H. perforatum*) and defoliate plants in spring, summer, and fall thus reducing the plants' ability to overwinter successfully.

Defoliation is the main damage produced by the beetle and does not normally exceed 25-50%, thus rarely causing mortality. The most damaging result is a reduction in commercial quality as the beetle specifically targets hypericin producing glands along petal margins. However, when the fungal pathogen *Colletotrichum gloeosporioides* (Anthracnose) is present in the soil or on the plant, the beetle becomes a vector for the spores, causing mortality rates to increase dramatically from 60-90%.

The beetle produces one generation per year and overwinters in the egg, larval, and occasionally adult stage. Eggs are laid singly or in clusters on the underside of foliage in fall or spring. Eggs laid in fall survive winter conditions and hatch the following spring. An individual female may lay thousands of oval, orange to reddish eggs per

generation. Eggs laid in spring will hatch after approximately three weeks when larvae migrate to flower buds and immature leaves. Larvae feed during early A.M. then return to soil for the remainder of the day. Young larvae are C-shaped and orange becoming gray-pink with age. Larvae continue to foliage feed until reaching maturity then burrow into soil where they create cells and pupate in late February and March. They emerge as oval orange beetles with wing pads, legs, head, and antennae visible in late April until June. Adults are attracted to terminal branches toward sunlight and feed during the warmest period of the day.

Adults emerge in spring and feed for several weeks before returning to soil for a resting stage. Fall rains activate the adults to mate and lay eggs. Adults are metallic, bronze, black, green, oval beetles 5-7 mm (0.2-0.28 in) long. *Chrysolina* sp. are invariably sedentary but will fly in response to decreases in their host plants or high temperatures (40˚C). Studies have proven that the beetles can move freely to widely separated populations of St. John's Wort (*H. perforatum*).

References

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Colletotrichum gloeosporioides (Anthracnose) symptoms.

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